PRESIDENTIAL ADDRESS.*

BY

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My first duty on occupying this seat is to make fitting acknowledgment of the honour which has been conferred on me, and to assure those to whom I am indebted for it, that, as I appreciate the distinction highly, so, with the aid of my colleagues in this section and the support of the many eminent men of science who will take part in its work, I hope to discharge faithfully the important trust reposed in me.

My next and most agreeable duty is to offer to all who honour us with their presence, or who propose by co-operation to forward the objects of the Congress, a most hearty welcome and cordial recognition of the interest in it manifested by their presence; to express a hope that the deliberations and conclusions which result from their wisdom and experience may advance our knowledge and tend to enhance the welfare of the human race.

This hope is based upon the universal recognition of the need of and capacity for improvement in the conditions upon which physical well-being, immunity from disease, and prolongation of life depend; and this is evinced by the assembling together in this Congress of men of science from all parts of the world, who have devoted themselves to the great international, humanitarian purpose of ameliorating the conditions of mankind everywhere, so far at least as the application of the laws of health, and to some extent those of sociology can effect this consummation.

To all, then, we in this great city, who are interested in the progress of Hygiene and Demography, offer our cordial greeting, and express an earnest desire that our visitors may derive pleasure and benefit from their sojourn in London, and from the proceedings of the great assembly of which they form so important a part.

Before I invite Dr. Cuningham to open the first subject for discussion, it is right that I should make a few preliminary remarks on the general scope and objects of the work comprised in this section. I do not intend to occupy much of the short and valuable time at our disposal by discussing any special subject, or by anticipating that which those who follow me may have to say, but shall confine myself to a brief notice of the present aspects of Preventive Medicine, its recent development, how much it has operated and is now operating for the public good, how slowly but surely it is dispelling the cloud of ignorance and prejudice which has overshadowed and impeded the progress of sanitation, and how it is gradually imbuing the public mind with the conviction that prevention is better and often easier than cure, that health may be preserved, disease avoided, and life prolonged by the study and observance of certain well-known laws, which, correlating the individual with his surroundings, determine his well-being when conformed to, deteriorate or prevent it when neglected, and should enforce the maxim "venienti occurite morbo."

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* Delivered at the International Congress of Hygiene and Demography held in London in 1891, Section I., Preventive Medicine.

p. 1629.

Unprecedented progress in human knowledge characterises the present century, and has not been wanting in Preventive Medicine; it is, however, during the last half of it that advance has been most remarkable, whilst it is in a later part of that period that it has so established itself in the popular mind as to have passed from the region of doubt and speculation into that of certainty.

It is now pretty generally understood that about one-fourth of all the mortality in England is caused by preventable disease, that the death-rate of large communities may be reduced much below that at which it has been wont to stand, the average duration of life may be made to approximate nearer to the allotted four score, and that the conditions of living may be greatly ameliorated. The chief obstacles to improvement have been ignorance and want of belief; a better knowledge of the laws of life and health, a more rational comprehension of the nature and causes of disease, are gradually but surely entailing improvement in the conditions of living and in the value of life, and the diminution and mitigation, if not extinction, of morbid conditions which have in past times proved so injurious or destructive to life. In short, as Dante says:

> "Se' l mondo laggiù ponesse mente
> Al fondamento che natura pone,
> Seguendo lui avria buona la gente."
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> Paradiso, viii., 142.

The subjects contemplated in the work of this section all bear upon the preservation of health and the prevention of disease, and, as far as time permits, the most interesting of them will be discussed. Those selected are of great importance in their relations to public health; let us hope that observers who have formed their opinions from experience in other countries and under different circumstances may throw new light on them.

In the brief space of time at my disposal, it would be impossible to give a continuous outline of the progress of Preventive Medicine during the past, or to trace its growth and development out of ignorance and superstition to its present well-established foundation on a scientific basis. It is of happy augury for mankind that the subject of public health is now fairly grasped by popular sentiment, and that, though ignorance, opposition, and vested interests still contest the ground, progress is sure, and the light of science is illuminating the dark places. It is now better appreciated than it ever has been, that the causes which induce disease and shorten life are greatly under our own control, and that we have it in our power to restrain and diminish them, and to remove that which has been called "the self-imposed curse of dying before the prime of life."

It is indeed only recently that the resources of medical science have been specially devoted to the prevention as distinguished from the cure of disease, and how far successfully, I hope in a few words to show, whilst I trust the proceedings of the various sections of this Congress will indicate how much remains to be done.

Did time permit, I might illustrate the progress of Preventive Medicine by contrasting the state of England with its population of more than 29,000,000 during the Victorian, with the England of the Elizabethan age with its 4,000,000. I might remind you of the frightful epidemics which had devastated the land in the forms of black death, sweating sickness, plague, petechial typhus, eruptive fevers, small-pox, influenza, and other diseases, such as leprosy, scurvy, malarial fever, dysentery, &c., of the wretched mode of living, bad and insufficient food, filthy dwellings, and ill-built towns and villages, with a country uncultivated and covered with marshes and stagnant water ;—[according to Defoe one-fifteenth part of England consisted of standing lakes, stagnant water and moist places, the land unreclaimed, and with the chill damp of marsh fever pervading all]. The homes of the people were wooden or mud houses, small and dirty, without drainage or ventilation, the floors of earth covered with straw or rushes, which remained saturated with filth and emitting noxious miasmata. The streets were narrow and unpaved, with no drains but stagnant gutters and open cesspools, while the food was principally salted meat with little or no vegetable. To this may be added a large amount of intemperance and debauchery. As it is, I can only just allude to them.

In such conditions disease found a congenial nidus, and by a process of evolution assumed the various epidemic forms which proved so destructive to life. Some of these have gone, let us hope never to return, and the conditions which fostered, if they did not cause them, have gone also. Can we venture to hope that it will be the same with those that remain ; our immunity during the last diffusion of cholera gives some ground for thinking it may be so, if, indeed, the legislature and popular intelligence should be of accord on the subject.

If we turn to the present, we find that great improvements have gradually been made in the mode of living ; the houses are better constructed, the drainage and ventilation are more complete, the land is better cultivated, and the subsoil better drained ; marsh fever and dysentery, at one period so rife, are unknown, and leprosy has long since disappeared. The death-rate is considerably reduced, and the expectancy of life enhanced. Water is purer, food is more varied and nutritious, clothing is better adapted to the climate, the noxious character of many occupations has been mitigated, and the mental, moral, and physical aspects of the people altogether improved ; education is general, a better form of government prevails, and the social conditions are far in advance of what they have been ; but still the state of our cities, our towns, and water supply show that improvement is demanded, and one object of this Congress is to point out why and how this may be effected, not only in this country, but throughout the world.

If we inquire into the effects of certain well-known diseases, we find that they are less severe in their incidence, if not less frequent in their recurrence.

With regard to Small-pox, since the passing of the first Vaccination Act in 1840, the death-rate has diminished from 57·2 to 6·5 per 100,000 for 1880–84, though for the five years 1870–74, it was 42·7, thus showing that there was still much to be learnt about vaccination.

Enteric fever was not separated from Typhus before 1869, but since then the death-rate has decreased from 0·39 to 0·17 per 1,000, and it has been shown that this improvement was synchronous in different parts of England with the construction of proper drains.

The diminution in the death-rate from Typhus is quite as striking, and this also is shown to have run parallel with improved sanitation in more than one large town.

The death-rate from Scarlatina fluctuated between 97 and 72 per 100,000 between the years 1851 and 1880, and though it has diminished considerably of late years (17 per 100,000 in 1886), a corresponding increase in the death-rate from Diphtheria has taken place; this may be due in part to a better differentiation of the two diseases.

In 1858 it was reported that Phthisis killed annually more than 50,000 people; the death-rate from this disease has not decreased very much for England and Wales, but it has done so in some large towns, notably in Liverpool, and Dr. Buchanan and Dr. Bowditch of Massachusetts, both showed a striking parallelism between the diminution of the death-rate from this cause, and the drying of the soil resulting from the construction of sewerage works.

Cholera first appeared in England in 1831, and there were epidemics of it in 1848–49, 1853–54, and 1865–66, but the number of deaths diminished each time it appeared, and though it has been present since, it has never reached the height of an epidemic. This is fairly attributable to local sanitary rather than to coercive measures.

Preventable disease still kills yearly about 125,000, and considering the large number of cases for every death, it has been calculated that 78¼ millions of days of labour are lost annually, which means 7,750,000*l.* per annum; this does not include the days lost by the exhaustion so often induced by the still too numerous unhealthy houses of the poor.

Towns, villages, and houses are still built in an insanitary way; the death-rate is still higher, and the expectancy of life lower than it should be, and though we have got rid of the terrible plagues of the middle ages, yet in this century, now closing, other epidemics have made their appearance; cholera has four times visited us; fevers, eruptive diseases, and diphtheria have prevailed; influenza has appeared several times, even recently, and after leaving us last year only to return with renewed virulence, caused in the United States a mortality almost equal to that of the plague.

Much has been done, and a great deal of it in what is called the pre-sanitary age, but much remains to be effected; let us hope that the future may be more prolific of improvement than the past; international philanthropy seems to say it shall be so.

That we can exterminate zymotic disease altogether is not to be expected, but there cannot be a doubt that we may diminish its incidence, and though we may never be able to reach the "fons et origo mali," yet we can make the soil upon which its seed is sown so inhospitable as to render it sterile.

The scope and objects of Preventive Medicine are not limited to the removing of conditions which give rise to zymotic disease, nor even of those which compromise otherwise the physical welfare of mankind, but should extend as well to a consideration of the best means of controlling or obviating those which, attending the strain and struggle for existence, involve over-competition in various occupations, whether political, professional, or mercantile, by which wealth or fame is acquired or even a bare livelihood is obtained, and under the pressure of which so many succumb, if not from complete mental alienation, from breakdown and exhaustion of the nervous system, which give rise to many forms of neurotic disease and add largely to the numbers of those laid aside and rendered unfitted to take their due share in the natural and inevitable struggle for existence.

Or I might point to the recrudescence of those psychical phenomena manifested by the so-called hypnotism or Braidism,—morbid conditions arising out of the influence of one mind upon another; this is a subject which demands not only further investigation, but great precaution as to its application, and claims the watchful notice of Preventive Medicine on account of the dangerous consequences which may ensue from it.

Again, the abuse of alcohol, opium, chloral, and other stimulants and narcotics, and the evil consequences which may result therefrom, is also a subject worthy of consideration, and will no doubt receive it in a communication which is to be brought before this section.

The possible deleterious influence of mistaken notions of education as evinced in the over-pressure which is exercised upon the young, the predominence of examinations, their increasing multiplication and severity, and the encouragement of the idea that they are the best test of knowledge, whilst true mental culture is in danger of being neglected and physical training, if not ignored, left so much to individual inclination,—this is another subject which demands the jealous scrutiny of Preventive Medicine, whose duty it is to safeguard the human race from all avoidable causes of either physical or mental disease.

Another important subject is that which concerns the food of the people, and especially of the rising generation. The possibility of danger arising from the consumption of the flesh or milk of diseased animals, the methods generally of providing animal food demands some consideration and is well entitled to the thoughtful attention of Preventive Medicine.

Though Preventive Medicine in some form has been practised since the days of Moses, yet it has received but little recognition until a comparatively recent period; when science developed and observation extended, medical men and others became impressed with the influence of certain conditions in producing disease, and thus it was forced upon the public conscience that something must be done; and when philanthropists like John Howard devoted life and property to the amelioration of such awful conditions as existed, *e.g.*, in our jails, where the prisoners not only died of putrid fever, the result of ochletic causes, but actually infected the judges before whom they came reeking with the contagion of the prisons, rude sanitary measures gradually came into operation and partially obviated these evil conditions, but it was not before the middle of this century that any scientific progress was made; it was when Chadwick, Parkes, Southwood Smith, and others initiated the work by which they have earned the lasting gratitude of the human race, that Preventive Medicine became a distinct branch of medical science.

The sanitary conditions of towns and communities is not dependent on the views or exertions of individuals alone, for they are and have been for the last fifty years largely cared for by the legislature and a variety of Acts have been passed which deal with questions concerning the public health; indeed, were all the provisions enforced, little would remain to be desired on the part of the executive Government, but as many of them are permissive, not compulsory, the benefit is less complete than it might be. The old difficulty of prejudice combined with ignorance, still too often stands in the way, and despite evidence which on any other subject would be conclusive, the most obvious sanitary requirements are often ignored or neglected. Many thousands of lives have been saved by the Sanitary Acts now in force; but there is little doubt that more thorough organisation under State control, as under a Minister of Public Health, would have most beneficial results, and would save a great many more, but be it always remembered that sanitary measures must be based on the results of experience and observation—not on mere theories of causation.

We must acknowledge, however, that we are much indebted to the action of the Government Local Board, who have already expended upwards of nine million pounds on sanitary work, and under whose able administration the most crying evils are gradually being rectified. Through the wise precautions enacted by it against the importation and diffusion of epidemic disease, when other parts of Europe were affected by cholera, this country escaped, or so nearly so as to suggest if not to prove that it was to sanitary measures we owed our immunity.

That there is something in the nature of epidemics which brings them under the dominion of a common law as to their extension seems certain; that there is much about them we do not yet grasp is equally true, but it is as surely the case that local sanitation is the preventive remedy, as it is that coercive measures to arrest their progress are unavailing.

Under the improved system of sanitary administration, which now obtains, and is gradually developing to a greater state of perfection, the sanitary administration of every district in the country is entrusted to the care of duly qualified health officers,—a system from which excellent results have already accrued, and from which better still may be anticipated.

The records of the past fifty years prove the influence exerted by sanitary measures on vital statistics.

The first reliable tables from which the expectancy of life may be derived show that in 1838 to 1854 it was for males 39·91, for females 41·85 years; by the tables of 1871 to 1880 it had increased to 41·35 for males, and 44·66 for females. It is shown also that the expectation of life increases every year up to the fourth year, and decreases after that age. For males up to 19 years it is higher by the last tables, but after that age it is higher by the old table; for females it is greater by the new table up to 45, but after that age it is less.

The improved sanitation saves more children's lives, but the conditions of gaining a living are harder than they were at the time of the first table, which accounts for the expectancy of life for adult men being less. Women remain more at home where the better sanitation tells, and are not subject to quite the same conditions as men, so that their expectancy of life is greater than by the old tables up to the age of 45.

A further proof of the effects of sanitary work is a decreased death-rate. Let us compare the death-rates of England during past times with the present; whether they be equally significant for other countries, I cannot say, but these at all events sufficiently prove the point in question.

DEATH-RATE.

1660–79	80	per 1,000.
1681–90	42·1	"
1746–55	35·5	"
1846–55	24·9	"
1866–70	22·4	"
1870–75	20·9	"
1875–80	20·0	"
1880–85	19·3	"
1885–88	18·7	"
1889	17·85	"

In some parts of England, where the main object is the recovery or maintenance of health, the death-rate is down to 9 per 1,000, while in others, where the main object is manufacture and money-making, it is as high as 30 per 1,000.

Nowhere, I think, have the beneficial results of sanitary work been better illustrated than in India during the past thirty years. A Royal Commission was appointed after the Crimean War to inquire into the sanitary condition of the British Army, and this in 1859 was extended to India. The European army was the special subject of it, but the Native troops were referred to incidentally. Here the inquiry had to deal with a large body of men, concerning whom, their conditions of existence being well known, reliable information was accessible. It was ascertained that up to that time, the annual death-rate over a long period had stood at 69 per 1,000. The inquiry resulted in certain changes and improvements in the housing, clothing, food, and occupation of the soldier. Since these have been carried out, there has been a steady decline in the death-rate, and the annual reports of the Sanitary Commissioners to the Government of India give the rates as—

1886 - - - 15·18 per 1,000.
1887 - - - 14·20 ,,
1888 - - - 14·84 ,,

During some years it has been even lower, down to 10 per 1,000, whilst the general efficiency of the troops has increased. It is not easy to estimate the money equivalent of this, but if we take the rough standard which values each soldier at 100*l.*, a simple calculation will show how great is the gain, and who can estimate the value of lives saved and suffering avoided?

As to Native soldiers with whom the European troops may be compared, I find that the death-rate was—

in 1886 - - - 13·27 per 1,000.
in 1887 - - - 11·68 ,,
in 1888 - - - 12·84 ,,

Famine, cholera, and other epidemic visitations in some years disturb the regularity of the death-rate; under less favourable conditions of living, as in the case of prisoners in the jails, it is somewhat higher.

In the Indian jails, for example, it was—

in 1886 - - - 31·85
in 1887 - - - 34·15
in 1888 - - - 35·57

On the whole, all this indicates improvement, but it is to be noticed with regret that during the last five years there has been a tendency to revert to a higher death-rate and per-centage of sickness. Let us hope this will prove only transitory; the attention of sanitary authorities both at home and in India is anxiously directed towards the removal of whatever may be the cause of it.

As regards the civil population progress also is being made; but here, from so many disturbing causes, the figures are neither so easily obtained nor so reliable. The comparatively large mortality is due to neglect of the common sanitary laws added to extremes of climate, which favour the incidence and diffusion of epidemic disease, and intensify it when it has once appeared.

"It is shown both by the vital statistics and the history of the chief diseases, that there is in India an enormous amount of preventable sickness and death." A. S. C.'s Reports for 1889.

A Sanitary Department has existed in India since 1866, and every effort is made by Government, at no small cost, to give effect to sanitary laws; there can be little doubt that the results, so far, are good, that disease generally is diminishing, and that life is of longer duration.

An important result of the observations of the able medical officers of the Sanitary Service of India has been to show that cholera is to be prevented or diminished by sanitary proceedings alone, and that all coercive measures of quarantine or forcible isolation are futile and hurtful. Here I may say that large as may appear the death-rate from cholera in India (*i.e.*, in 1888, 1·99 per 1,000 for the European army and 1·35 for the civil population), it is small compared with that of fevers, which caused, in 1888, 4·48 per 1,000 in the European army and 17·09 in the civil population; but there is every reason to believe that on the whole these also are becoming less fatal under the influence of sanitary measures.

In preventive as in curative medicine, knowledge of causation is essential. It is obvious that any rational system of proceeding must have this for its basis. A certain empirical knowledge may be useful as a guide, but no real advance can be expected without the exactitude which results from careful scientific observation and induction; the spirit of experimental research, however, is now dominant, and progress is inevitable. How much we owe to it is already well known, whilst, under its guidance, the reproach of uncertainty which attaches to medicine as a science is disappearing. Recent advances in physiology, chemistry, histology, and pharmacology have done much to throw light on the nature and causes of, and also on the means of preventing or of dealing with disease.

It is impossible to exaggerate the value of the scientific researches which have led to the antiseptic methods of preventing the morbific action of micro-organic life, whether the toxic effects produced by them, or those induced autogenetically in the individual. Theory has here been closely followed by its practical application in prevention and treatment of disease, whilst the study of bacteriology, which is of such remarkable pre-eminence at the present time, is opening out sources from which may flow results of incalculable importance in their bearing on life and health. That the conclusions arrived at are always to be depended on I doubt, and it seems that scientific zeal may perhaps sometimes outrun discretion. Is it too much to recall the caution uttered by Dante, to beware of

> "Immagini di ben seguendo false
> Che nulla promission rendono intera."
>
> Purgatorio, xxx., 131.

That it might be wiser to postpone generalisation has, I think, been more than once apparent, whilst the expediency of further investigation before arriving at conclusions which may subsequently prove to be erroneous, should not be lost sight of; but it has probably ever been so in the course of scientific progress, that in the enthusiasm of research, which is rewarded by such brilliant results, early generalisation has too often been followed by disappointment, and it may be by temporary discouragement of hopes which seemed so promising.

It would be well to bear in mind a caution recently given by the Duke of Argyll, "that we should be awake to the retarding effect of a "superstitious dependence on the authority of great men, and to the "constant liability of even the greatest observers to found fallacious "generalisations on a few selected facts."* Still it is in the region of scientific research by experiment that we look for real progress, and we can only deplore the mistaken sentiment, the false estimate, and the misconstruction of its aspirations and purposes, which have placed an embargo on experiment on living animals, rendering the pursuit of knowledge in this direction well-nigh impossible, if not criminal; whilst for any other purpose, whether of food, clothing, ornament, or sport, a thousandfold the pain may be inflicted without question. The inconsistency of the sentiment which finds unwarrantable suffering in an operation performed on a rabbit, when the object is to preserve human or animal life or prevent suffering, but which raises no objection to the same animal being slowly tortured to death in a trap, or hunted or worried by a dog, needs no comment; whilst the spirit which withholds from the man of science what it readily concedes to the hunter, is, to say the least, as much to be regretted as it is to be deprecated.

It must be remembered that, important as are the researches into microbiology, there are other factors to reckon with before we can hope to gain a knowledge of the ultimate causation of disease. It is not by any one path, however closely or carefully it may be followed, that we shall arrive at a full comprehension of all that is concerned in its etiology and prevention, for there are many conditions, dynamical and material, around and within us of some of which we are as yet perhaps altogether ignorant, which have to be considered in their mutual relations and bearings before we can hope to do so; still I believe we may feel satisfied that the causes of disease are now being more thoroughly sought out than they ever have been,—all honour to those who are prosecuting the research so vigorously,—and that though individual predilection may seem sometimes to dwell too exclusively on specific objects, yet the tendency is to investigate everything that bears upon the subject, and in the practical application of the knowledge which has been acquired, to emphasise all that is implied in the aphorism, "salus populi, suprema lex."

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* "Nineteenth Century," April 1891.

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LONDON: Printed by EYRE and SPOTTISWOODE,
Printers to the Queen's most Excellent Majesty.